



Family Medicine
Residency of Idaho, Inc.

Idaho Family Physician Rural Work Force Assessment Pilot Study

Prepared for:

Office of Rural Health and Primary Care
Health and Welfare Department
State of Idaho

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June 2007

Acknowledgements

This research was funded by the Idaho Department of Health and Welfare, Office of Rural Health and Primary Care (contract HC565300) through grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration. The authors thank Neva Santos, Executive Director of the Idaho Academy of Family Physicians, Inc., and Steven Millard, President of the Idaho Hospital Association, for their assistance in this research.

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Introduction

The American Academy of Family Physicians released a report in September of 2006 which suggested that Idaho, along with Nevada, Arizona, Florida and Texas, would experience serious shortages of Family Medicine physicians by 2020. Two general factors associated with the projected shortfall of Family Medicine physicians in these states included population growth and an increase in the number of elderly citizens. In Idaho, the current number of Family Medicine physicians is approximately 480 and will need to increase by about 50% to 720 in 2020. Many Idaho Family Medicine physicians practice in rural areas. These rural areas experience significant challenges in recruiting and retaining Family Medicine physicians. These challenges can materially impact local community access to health care, both for general medical care and for specific medical services such as obstetrics. Information on the recruitment and retention of Family Medicine physicians in Idaho is of significant interest to Idaho rural hospitals, educational institutions, federal and state government agencies, legislators and the rural community at large.

Boise State University (BSU) entered into a contract (HC565300) with the Idaho Department of Health and Welfare (IDHW) in November of 2006 to conduct research related to the Idaho Family Medicine physician rural work force. Generally, the purpose of the contract was twofold: (1) to support the goals and objectives of the State Office of Rural Health grant (CFDA 93.913); and, (2) to support the mission of the State Office of Rural Health and Primary Care to improve access to quality healthcare services for the people of Idaho. Furthermore, this research was aligned with the IDHW Strategic Plan FY 2005-2008, Goal 3, to integrate health and human services.

Specifically, BSU agreed to provide the following services and deliverables.

1. BSU agreed to research recruitment and retention issues faced by rural hospital administrators and rural Family Medicine physicians in states similar to Idaho and produce a summary of research findings.
2. BSU agreed to use the research findings noted in #1 to develop and implement survey instruments to gather Idaho-specific information about rural Family Medicine physician recruitment and retention challenges experienced by rural hospital administrators and practicing rural Family Medicine physicians in Idaho. BSU agreed to provide copies of these instruments to the Department of Health and Welfare – Office of Rural Health and Primary Care.
3. BSU agreed to analyze the survey results and to create a written summary of the findings with recommendations.

This report serves as the deliverable to above-referenced BSU commitments. The Research Summary Section and the Literature Review Summary Grid found in Appendix A organizes and categorizes the recruitment and retention research involving rural Family Medicine physicians

published over the last ten years. Based on this research integration, two surveys and associated documentation were developed for both Hospital Administrators and Family Medicine physicians (see Appendices B through E). The survey administration process for these two surveys is described in the Methods Section. It is particularly noteworthy that the Idaho Academy of Family Physicians, Inc., and the Idaho Hospital Association provided material support to Boise State University and Family Medicine Residency of Idaho in the selection and recruitment of respondents. The Results Section provides summary and comparative data analysis for these two surveys. Finally, the Discussion section establishes a framework to incorporate these findings into actionable knowledge for the State of Idaho.

Research Summary

Introduction

The purpose of the research summary was twofold: (1) to identify factors important in the recruitment and retention of rural Family Medicine physicians, and (2) to ascertain opportunities to expand the literature base related to recruitment and retention of rural Family Medicine physicians. Boise State University graduate and undergraduate student researchers searched and catalogued a convenience sample of the published literature over the past 10 years. The student research team accessed selected published articles and research studies through the Boise State University Albertson library article search feature and journal search portal giving direct linkage to medical journals and archived articles. The purpose of this search was to identify a group of representative articles that could be utilized to achieve the purpose of the research summary and was not intended to be exhaustive or to identify all research in the area.

Four core areas of interest related to recruitment and retention of rural Family Medicine physicians were selected for study and categorization after a preliminary review of selected articles and research studies and discussions with practicing physicians at Family Medical Residency of Idaho (FMRI). These core areas were Demographics, Scope of Practice, Economic, and Lifestyle. Each of the core areas was further organized into sub-categories. These subcategories are detailed in the specific section for each core area.

Articles and research studies were included in the research summary if they were published within the last 10 years and addressed the United States health delivery system or a system comparable to the US health care system. Both research studies and general articles were included in the research summary. Overall, fifty one (51) articles and research studies were identified and categorized by the student research team. Appendix A is a breakdown of the articles and research studies into their main core areas and sub-categories. The 51 articles and research studies produced 202 total classifications within the sub-categories of the four core areas. An individual article or research study could create multiple classifications if it addressed a variety of core areas and/or sub-categories. Demographics produced the most classifications 83/202 (41.1%) followed by Economic 49/202 (24.3%), Scope of Practice 43/202 (21.3%) and Lifestyle 27/202 (13.4%).

The following sections specifically address the identified four core areas of interest to recruitment and retention of rural Family Medicine physicians and the sub-category classifications for each of these areas.

Demographics

The Demographics core area included the sub-categories age, gender, medical education/training, family background, and other. Each of these sub-categories is addressed below. Note that the percentages listed below are based on the total number of classifications within the Demographic core area. Overall, the Demographic core area produced 83 of 202 total classifications (41.1%).

Age produced 10/83 (12.0%) of the classifications within the Demographics core area. Older students were more likely to plan to enter family medicine (Rosenblatt & Andrillal, 2005).

However, it was not clear whether these older students were also more likely to enter rural practice. The maturing population of practicing physicians is also of concern as, “this shift...is only beginning to make its mark and will likely become more obvious as the aging physicians’ workforce retires.” (The Massachusetts Medical Society 2006 Physician Workforce Study, 2006, pg. 3). A central concern is whether older, rural Family Medicine physicians can be replaced with qualified practitioners as they retire.

Gender produced 15/83 (18.1%) of the Demographics classifications. Overall, men were not generally attracted to the primary care specialties; however, if they did have a desire to work in family care, they were more likely to practice in rural areas than females. Females were strongly attracted to primary care specialties, but were less likely than men to choose a rural practice (Rosenblatt & Andrilla, 2005). However, one study concluded “women are slightly less likely to practice rural medicine than men, although this is not true for women who enter medical school committed to rural family practice.” (Rabinowitz & Paynter, 2002, pg. 113). Ellsbury, Baldwin, Johnson, Runyan and Hart (2002) state:

The growing proportion of women in medicine threatens to exacerbate the ongoing shortage of rural physicians. Women who gravitate toward primary care specialties are less likely than men to practice in rural areas. ... Because rural areas rely mainly on primary care providers for health care, the recent increase in numbers of women in medical training is likely to have a major impact on the supply of medical providers for rural areas. (p. 391)

The literature points out the need to find ways to attract females, who are already attracted to primary care, to rural practices.

Medical/educational training is the third sub-category in the Demographics core area; this is a subcategory with substantial research behind it with 30/83 (36.1%) of the classifications specifically addressing the issue. If medical students have direct contact with a comprehensive rural program, they are more likely to consider a rural position as well as remain in the position for a longer period of time. However, Rosenblatt, Schneeweiss, Hart, Casey, Andrilla, Holly and Fredrick (2002) indicate:

...very little US family medicine training occurs in rural areas. In the aggregate, 7.5% of family medicine training in the United States occurs in rural areas, although 22.3% of Americans live in rural places. Establishing rural family medicine training programs in rural areas is one strategy that contributes to the production of rural physicians but it has not been widely adopted in the United States. (p. 1064)

There are distinguished programs already in existence seeking to attract medical students intending to go into a rural practice such as the Physician Shortage Area Program (PSAP) of Jefferson Medical College in Pennsylvania, functioning since 1974. “The PSAP recruits and selectively admits academically qualified students who grew up or lived in a rural area or small town, and who also have a firm commitment to practice the specialty of family practice in a similar area.” (Rabinowitz, Diamond, Markham, Paynter, 2001 p. 1042). The PSAP curriculum program includes specific requirements for extensive work in a rural community. Another prominent program for training medical students for rural practice is the WWAMI (Washington,

Wyoming, Alaska, Montana, and Idaho) program in the Pacific Northwest, which specifically places students in rural settings for training rotations and for their residency. Rabinowitz & Paynter (2002) stated:

...overall, medical schools with special admissions programs and those with extensive rural curricula have been more successful in producing rural physicians, as have residency programs with rural training tracks, although collectively these programs are too small to eliminate the US rural physicians shortage. (p. 113)

Both the PSAP and WWAMI type programs can help in the recruitment and retention of Family Medicine physicians. By educating the medical students early, and encouraging Family Medicine practice as the PSAP and the WWAMI programs do, more medical students may choose the general practice path. These two programs have been successful in getting medical students to choose rural family practice.

Furthermore, today's medical students are choosing specialties other than family practice. This is a trend that is well established. Rabinowitz & Paynter (2002) stated,

...thus the size of the future rural physician workforce may be threatened by the trend of US medical students to increasingly train in non-generalist specialties and subspecialties, which persists despite evidence that provision of primary care is related to improving health outcomes. (p.113)

The US health care delivery system continues to produce and maintain a system dominated by specialty care. In most industrial democracies comparable to the US, there are more generalists than specialists in the practitioner base. If the trend to specialization continues and perhaps accelerates, there will be a smaller base of generalists for rural based practice.

Family background is an important factor in recruiting and retaining rural physicians as 20/83 (24.1%) of the comparisons occurred in this sub-category. "One of the most effective ways to attract rural health professionals is to train people from rural backgrounds in programs with a rural emphasis." (Rosenblatt, Andrilla, Curtin and Hart, 2006, p. 1047). Research has identified variables predicted for providing substantial care to underserved populations as (1) belonging to an underserved minority, (2) having participated in a specific group dedicated to underserved communities, (3) having a strong interest in rural settings prior to medical school, and (4) having grown up in a rural community (Rabinowitz, Diamond, Veloski and Gayle, 2000). There is significant data showing that the recruitment and retention of such individuals is far more successful than medical students that did not have this background.

Economic

The Economic core area included the sub-categories salary, malpractice, solo practice, cost of living and the general subcategory of other. Each of these sub-categories is addressed below. Note that the percentages listed below are based on the total number of classifications within the Economic core area. Overall, the Economic core area produced 49 of 202 total classifications (24.3%).

Out of the 49 total classifications reviewed in the Economic core area, 17 mentioned the sub-category salary (34.7%). Many articles did not list it as a high priority, while others thought that salary issues were important. Schleicher (2006) commented:

Because of the shortage of health care professionals in rural areas, some professionals found their employer was willing to pay a high salary, or offer other financial incentives, to entice them to the area. A good salary goes even further in a rural area because the cost of living typically is low. (p. 27).

While this is not always the case, it does seem that physicians who are contemplating a rural practice are already prepared for a smaller paycheck. The average salary for a family practice physician is relevant, for if rural communities do not offer at least competitive economic incentives, they could lose physicians to urban areas that can offer attractive packages.

Only one of 49 classifications (2.0%) addressed the sub-category malpractice, which while widely studied with regard to tort reform and financial caps, is an area that has not been well researched in regards to rural practice. A 2005 study done by Baicker and Chandra commented:

...physicians practicing in rural areas may be particularly sensitive to increases in liability: since malpractice premiums are not typically rated by physician volume, physicians in rural areas will find it difficult to increase the price of their services enough to cover their increased costs (compared to urban physicians with a larger patient base who can spread out the increase in fixed-costs stemming from an increase in malpractice premiums). (p. 6)

Further research into the issue of malpractice as an issue in the retention and recruitment of Family Medicine physicians may be warranted. As a fixed cost, a smaller number of patients may impede the ability of a physician to spread the cost of malpractice insurance over a sufficient number of individuals.

The sub-category solo practice was addressed in six of 49 (12.2%) classifications. A rural private practice may be inviting to those with an entrepreneurial spirit as, "it may be easier to set up a private practice in a rural community than in a metropolitan area." (Schleicher, 2006, pp. 28-29). However, solo practice may also prove disadvantageous in vacation coverage and other practice economies of scale. In addition, initial start-up costs can be a hurdle.

The sub-category cost of living was identified in two of 49 (4.1%) classifications. Rural communities may be enticing to new physicians strictly from a lower cost of living aspect. "Housing also is more affordable in a rural community...Several professionals stated they were able to afford home ownership much sooner than they would have in an urban area." (Schleicher, 2006, p.27) Cost of living may persuade potential physicians into rural settings provided the lower cost of living is not degraded due to lower practice revenues in these rural areas.

Spousal employment was discussed in 10/49 (20.4%) Economic core area classifications. Ellsbury, Baldwin, Johnson, Runyan, and Hart (2002) reported that women are especially sensitive to this issue. They reported:

Women reported that they had spent fewer years in their previous practice and were significantly more likely than men (52% vs. 24%, $P<0.05$) to have had a partner or spouse looking for work when considering their current practice.” (p.393)

Spousal employment is important, especially for retention of qualified physicians. Mackay (2003) reported “Physicians were coming into the community, and if the spouse and family were not content, they were leaving after a short period.” (p. 473).

Scope of Practice

The Scope of Practice core area included the sub-categories operative obstetrics, electronic medical records (EMR), medical technology, mental health, hospital availability, continuing education, and the general subcategory of other. Each of these sub-categories is addressed below. Note that the percentages listed below are based on the total number of classifications within the Scope of Practice core area. Overall, the Scope of Practice core area produced 43 of 202 total classifications (21.3%).

Operative obstetrics was identified in three of 43 (7.0%) classifications. Rural settings have a difficult time attracting a generalist, let alone those who specialize. Specialty physicians are more difficult to recruit largely in part due to the size of the community. Rosenblatt et al (2006) reports “Obstetrician/gynecologists and psychiatrists represent less than 10% of the CHC (Community Healthcare Centers) physician workforce and are more likely to be found among urban grantees.” (p. 1044). One study polled CEOs in both urban and rural settings and discovered, “half of the respondents mentioned the need for physicians in obstetrics-gynecology.” (Glasser, Peters, and MacDowell, 2006, p. 60). Though many articles admitted the fact that OB/GYN services are largely unfilled, there was no mention of prospective physicians basing their decision to practice in a given area based on whether operative obstetrics was available nearby.

The electronic medical records sub-category was addressed in only one of 43 (2.3%) classifications. Campbell, Harris and Hodge (2001) noted that “Rural health providers face unique challenges in delivering care: isolation, lack of communication, and lack of access to current medical information” (p. 419). Electronic medical records with current and regularly updated clinical pathways could help in this regard.

On a more general note, the subcategory medical technology was noted in nine of 43 (20.9%) classifications. There seemed to be some anticipation that government dollars will enable rural physicians to participate with the most current electronic technology, as well as communicate with a whole network of colleagues that would normally not be available to them. “Telemedicine experts hope that a multimillion-dollar federal program to boost telecommunications capabilities in rural health care settings will create new avenues of access to medical information and other services” (Voelker, 1998, pg. 183). If this program should succeed, rural areas could have access to video conferencing, specialty physician follow up, as well as access to any continuing education that may be offered in such a format. Another aspect of medical technology is the actual equipment used by physicians and hospitals. Perch, Yallapragada, Birkenmeier, Authement and Roe (1997) found issues in rural practice related to medical technology.

Examination equipment, especially high-ticket items such as EKG monitors, will take longer to pay off because of minimal use. Doctors also incur greater expense to maintain the machines because they have to call on experienced technicians from the city, who will charge for travel in addition to service fees. Young physicians may be hesitant to begin such a practice with the amount of debt they have already incurred to pay for their education. Rural communities are poorer and may not be able to offer adequate facilities or technology. (p. 31).

The mental health sub-category was identified in only one of 43 (2.3%) classifications. The one study found briefly stated the need for mental health practices as 36% of the CEOs reflected a need for mental health providers in their rural communities (Glasser et al, 2006).

Seven of 43 classifications (16.3%) listed hospital availability as a concern for rural physicians. As one article stated, “the financial instability of rural hospitals makes it difficult to recruit and retain physicians” (Perch, et al, 1997, p.31). For the prospective physician, a record of past funding, and budgeted future funds for the medical facilities, is an important factor in considering a rural placement.

Eleven (11/43, 25.6%), classifications mentioned continuing education. Few elaborated on the fact that it may be an area a potential physician considers when contemplating a rural practice. Perch (1997) stated, “Physicians also experience professional isolation and a lack of continuing education.” (p. 31). In most remote areas, a physician is the only medical staff the community has. Getting away to attend continuing education conferences proves difficult in such situations. Additional research on the availability and acceptance of alternate means of continuing education may prove beneficial, especially if such continuing education is important to rural physicians.

Lifestyle

The Lifestyle core area included the sub-categories recreation, time off duty, cultural proximity, spousal employment and the general subcategory of other. Each of these sub-categories is addressed below. Note that the percentages listed below are based on the total number of classifications within the Lifestyle core area. Overall, the Lifestyle core area produced 27 of 202 total classifications (13.4%).

The sub-category recreation, was addressed in four of 27 (14.8%) classifications. Schleicher (2006) identified outdoor recreational opportunities, such as hiking, fishing, and hunting, easily accessible in rural areas, as notable factors. Idaho is uniquely poised to take advantage of these factors with its superior outdoor recreational opportunities.

The time off duty sub-category was identified in five of 37 (18.5%) classifications. This sub-category addressed issues such as working hours, on-call responsibilities, working part-time, flex time and actual vacation time. Physicians have long been known for the hours they put in. Today, more physicians are looking for balance of family or personal time off with their professional obligations. Wainer (2004) found:

Many of the GPs cited lack of child care for after hours work as a major issue for them, particularly when called in after hours to their local hospital. One result of this was a refusal to undertake after hours work.” (p. 51).

Part-time is also an option pursued by some physicians. Wainer found “Eighty-four percent of GPs ($n = 73$) and 67% of specialists ($n = 6$) who worked part time, did so for family reasons.” (p. 50). Balancing work and home life is an issue for most physicians and may not be specifically related to rural practice.

The cultural proximity sub-category was identified in three of 27 (11.1%) classifications. Only one clearly stated the connection between cultural proximity and rural living. Rosenblatt et al (2006) stated “lack of cultural activities and opportunities... were perceived as disproportionately greater barriers for rural centers” (p. 1046). Intuitively, one would expect lack of cultural opportunities would differentially influence physician behavior as the distance from the practice site to the cultural site increased.

Summary

For years, experts projected a surplus of physicians in the workforce by the year 2000; recently a reversal has taken form and now reports warn of an imminent and existing shortage in the physician work force around the nation (The Massachusetts Medical Society 2006 Physician Workforce Study, 2006). Although this warning is national in focus, it may be felt most strongly in rural America. “With 20% of the US population residing in rural areas, but only 9% of physicians practicing there people living in rural areas constitute one of the largest underserved US populations.” (Rabinowitz, Diamond, Markham, Paynter, 2001 pg 1041).

The purpose of the research summary was twofold: (1) to identify factors important in the recruitment and retention of rural Family Medicine physicians, and (2) to ascertain opportunities to expand the literature base related to recruitment and retention of rural Family Medicine physicians. Four core areas of interest related to recruitment and retention of rural Family Medicine physicians were selected for study and categorization. These core areas were Demographics, Scope of Practice, Economic, and Lifestyle. Overall, fifty one (51) articles and research studies were identified and categorized by the student research team. The 51 articles and research studies produced 202 total classifications within the sub-categories of the four core areas.

The Demographic core area generated the most research classifications (83/202, 41.1%). Medical education/training and family background sub-categories were identified as important factors relating to recruitment and retention of rural physicians. The Economic core area produced the second highest number of classifications (49/202, 24.3%). Salary and spousal employment were highlighted as significant issues. The Scope of Practice core area produced the third highest number of classifications (43/202, 21.3%). Medical technology and continuing education were important sub-categories in this area. Finally, the Lifestyle core area produced the smallest number of classifications (27/202, 13.4%). The sub-category of importance in this core area involved time off duty.

Methods

Human Subjects Review and Approval

The research methods described in this section as well as the survey instruments and associated documents found in Appendices B through E were reviewed and approved by the Boise State University Human Subjects Institutional Review Board on March 16, 2007.

Survey Development

Both the Hospital Administrator Survey and the Rural Family Medicine Physician Survey were developed by the researchers post construction and evaluation of the Literature Review Summary Grid (see Appendix A). The evaluation of this literature synthesis suggested that an opportunity existed to contribute to the literature by examining scope of practice issues involved in recruitment and retention of rural Family Medicine physicians. Consequently, the surveys were weighted with questions that involved scope of practice issues. The draft surveys, cover letters and associated e-mail notification documents were reviewed by Family Medicine physicians from the Family Medicine Residency of Idaho, by leaders of the Idaho Academy of Family Physicians, Inc., and by executives at the Idaho Hospital Association. The final documents can be found in Appendices B through E.

Selection and Recruitment of Target Populations

The target population for the Hospital Administrator Survey were Hospital Administrators in hospitals in Idaho counties with populations of less than 50,000. The Idaho Hospital Association (IHA) identified 29 hospitals meeting this criterion from their database. The IHA was the primary contact to these Hospital Administrators for all correspondence related to this research. This included the initial e-mail notification that a survey was being sent, the mailing of the survey and cover letter, and the second e-mail notification (see Appendices B and C). Surveys were sent by the IHA to 28 respondents as two hospitals shared one Hospital Administrator.

The target population for the Rural Family Medicine Physician Survey were Family Medicine physicians practicing in Idaho counties with populations of less than 50,000. The Idaho Academy of Family Physicians, Inc. (IAFP) initially identified 275 Family Medicine physicians meeting this criterion in their database. The IAFP was the primary contact to these Family Medicine physicians for all correspondence related to this research. This included the initial e-mail notification that a survey was being sent, the mailing of the survey and cover letter, and the second e-mail notification (see Appendices D and E). Surveys were delivered by the IAFP to 248 respondents as incorrect addresses resulted in 27 surveys being returned.

Survey Administration Process

The Idaho Hospital Association (IHA) and the Idaho Academy of Family Physicians, Inc. (IAFP) both followed the same survey administration process and timeline for distributing their surveys. First, the IHA and the IAFP sent an e-mail notification to their respective respondents on or about April 6, 2007, that a survey was being sent to members of their associations related to recruitment and retention of Family Medicine physicians (see Appendices C and E). Simultaneously, the surveys were mailed to the respondents. The survey package included: (1)

the survey (see Appendices B and D), (2) a cover letter with IHA and IAFP letterhead, and (3) a Boise State University Center for Health Policy return postage paid business reply mail envelope. The survey package was enclosed in an IHA or IAFP official envelope. Respondents were requested to return the survey by April 30, 2007. On or about April 16, 2007, a reminder e-mail was sent by the IHA and IAFP (see Appendix C and E). Completed surveys were sent to Boise State University and were processed in the Center for Health Policy, College of Health Sciences.

Data Processing, Analysis and Storage

The surveys were processed at Boise State University by researchers who coded quantitative responses and entered these data into an Excel database. The qualitative comments were transcribed into Word documents. The researchers then reviewed and categorized these responses.

These data were transferred from Excel files to SPSS (Version 14.0) for statistical analysis. The overall analyses for the Hospital Administrator Survey and the Rural Family Medicine Physician Survey employed descriptive statistics. The comparative analyses for the Rural Family Medicine Physician Survey utilized t-tests (with equal and unequal variance assumptions) and Mann-Whitney U tests for survey questions with numerical responses, and Chi-Square and Fisher's Exact tests for survey questions with categorical responses.

These data have been stored in locked files and password protected hard drives at the Center for Health Policy at the College of Health Sciences, Boise State University. Access to the raw data has been limited to the research investigators.

Results

The results for this study are organized into three sections. First, the results for the Hospital Administrator Survey are presented. The Hospital Administrator Survey results have two components: the overall quantitative and overall qualitative results. The second section of the results portrays the findings for the Rural Family Medicine Survey. The Rural Family Medicine Survey results have five components: the overall quantitative and qualitative results, and the comparative results for the quantitative variables by gender, age group and employment group. Finally, the last section of the results provides comparisons across survey respondent groups (Hospital Administrators versus Family Medicine physicians) for selected quantitative variables. The tables supporting these results are found in the Tables section of the report.

Hospital Administrator Survey Results

The Hospital Administrator Survey was mailed to 28 Hospital Administrators and was returned by 19 for a survey response rate of 67.9%. The two components of the results for this survey are found below.

Overall Quantitative Results

The overall quantitative results section is divided into three areas. First, the survey questions with numerical answers are detailed in Table 1. Second, survey questions with dichotomous answers are presented in Table 2. And finally, survey questions with satisfaction answers are found in Table 3.

Table 1 results show that Hospital Administrator respondents had average of 4.8 full time equivalent (FTE) Family Medicine physicians on staff at their facilities. The average number of Family Medicine physicians currently being recruited at these hospitals at the time of the survey was 0.8 FTEs. The median number of FTE Family Medicine physicians being recruited was 0 (10/18, or 55.6% of the responses indicated that the facility was recruiting no FTE Family Medicine physicians at the time of the survey). The average distance from the practice site to a higher service level hospital at these facilities was 61.9 miles. Hospitals Administrators reported that Family Medicine physicians should work an average of 37.4 hours per week on direct patient care, should be on call for any service an average of 32.6 hours a week and should see an average of 89.5 clinic patients per week.

Table 2 results show that 61.1% of the respondents indicated that they had an opportunity for loan repayment for Family Medicine physicians at their facilities. Family Medicine physicians at these facilities were reported to provide (% providing) obstetrics services in the areas of prenatal care (83.3%), vaginal delivery (63.2%) and C-sections (57.9%). These Family Medicine physicians were also reported to provide other operating room services (52.6%), EGD or colonoscopy services (50.0%), emergency room coverage (68.4%), inpatient admissions (100%), mental health services (42.1%), and nursing home services (94.7%). Respondents reported that Family Medicine physicians supervised midlevel care providers at 78.9% of their facilities. Family Medicine physicians at these facilities are reported to use a variety of internet databases, teleconferencing, electronic health records for patient care and other electronic physician education materials (use rates among categories ranged from 61.1% to 94.4%). Hospital Administrators reported a requirement of maintaining board certification in Family Medicine at

their facilities in 64.1% of the responses and 100% of the respondents indicated that they would support educational opportunities for medical students and/or residents at their sites.

Table 3 results show that 58.9% of Hospital Administrators were very satisfied or satisfied with compensation for their Family Medicine physicians. They were very satisfied or satisfied with malpractice coverage (93.8%), coverage for vacation or leave (75.5%), ability to recruit qualified family Medicine physicians (68.8), and turnover (77.8%) for Family Medicine physicians at their facilities. Hospital administrators reported a satisfied or very satisfied level of 94.5% with their current Family Medicine physician staff.

Overall Qualitative Results

Two qualitative questions were asked of the Hospital Administrator respondents. First, they were asked about employment business models they utilized with their Family Medicine physicians. This question resulted in a variety of answers without any concentration of responses. Answers included independent practice models with income guarantees, hospital employee models for covering the emergency room, recruitment assistance and full employment arrangements. The second question focused on identifying the most significant barrier to full recruitment of qualified Family Medicine physicians. Once again, there was a wide variety of answers which included compensation, living in isolated communities, spousal issues and having dedicated time to recruit Family Medicine physicians.

Rural Family Medicine Physician Survey Results

The Rural Family Medicine Physician Survey was successfully mailed to 248 rural Family Medicine physicians and was returned by 92 for a survey response rate of 37.1%. The five components of the results for this survey are found below.

Overall Quantitative Results

The overall quantitative results section is divided into three areas. First, the survey questions with numerical answers are detailed in Table 4. Second, survey questions with dichotomous questions are presented in Table 5. And finally, survey questions with satisfaction answers are found in Table 6.

Table 4 results indicate that rural Family Medicine physician respondents were an average of 47.2 years of age and had an average of 16.0 years in practice post residency. These Family Medicine physicians reported an average of 12.9 years of service at their current practice site and anticipated they would be at this site for an additional average of 13.1 years. They also reported that they anticipated future years of work at any site to be an average of 16.7 years. The average distance from the practice site to the reported physician residency site was 705.7 miles. Rural Family Medicine physicians who responded to this survey reported that they provided an average of 44.3 hours per week on direct patient care, were on call for any service an average of 40.0 hours a week and saw an average of 88.5 clinic patients per week.

Table 5 results show that 23.1% of the respondents were female and 33.7% of the respondents had medical school or residency training in Idaho. Of the responding Family Practice physicians, 21.7% indicated that they had an opportunity for loan repayment at their current site.

Family Medicine physicians reported providing (% providing) obstetrics services in the areas of prenatal care (57.6%), vaginal delivery (52.2%) and C-sections (37.0%). These respondents also provided other operating room services (43.5%), EGD or colonoscopy services (22.5%), emergency room coverage (48.9%), inpatient admissions (88.9%), mental health services (90.1%), and nursing home services (88.0%). Family Medicine physicians also reported responsibility for supervising midlevel care providers in 72.5% of the responses. Respondents reported use of internet databases, teleconferencing, electronic health records for patient care and other electronic physician education materials (use rates among categories ranged from 36.7% to 83.5%). Rural Family Medicine physicians indicated that they were planning to maintain board certification in Family Medicine in 89.7% of the responses and 88.4% of the respondents indicated that they would encourage medical students or residents to enter rural Family Medicine.

Table 6 results show that 69.6% of rural Family Medicine physicians were very satisfied or satisfied with compensation for patient care. They were very satisfied or satisfied with malpractice coverage (79.3%), coverage for vacation or leave (85.9%) and the ability of their hospital to recruit qualified family Medicine physicians (53.5%). Rural Family Medicine physicians reported a satisfied or very satisfied level of 92.4% with their current practice.

Overall Qualitative Results

Two qualitative questions were asked of the rural Family Medicine physician respondents. First, respondents were asked about their employment/business relationship. This question was coded into “Employed” and “Not Employed” categories and was used in comparative analyses as a classification variable. Respondents reported being employed in 33.3% (30/90) of the cases and not employed in 66.7% of the cases (60/90). This question resulted in a variety of answers without any concentration of responses. Answers included co-owner of a corporation, employed by Community Health Center, employed by hospital, solo LLC and partnership. The second question focused on identifying the rural Family Medicine physician’s primary source of continuing medical education. Once again, there was a wide variety of answers which included conferences, AAFP and CME courses, journals, home study, meetings and internet materials.

Comparative Results by Gender

The responses from the Rural Family Medicine Physician Survey were analyzed for differences by gender and these results are portrayed in Tables 7, 8 and 9. Statistically significant results ($p=0.05$) are highlighted in yellow. Results with marginally significant results (in this case p values from greater than 0.05 to less than 0.20) are highlighted in tan. These marginally significant results are useful given the lack of statistical power due to small sample sizes in some cells and given the fact that this study serves as a pilot project to identify areas of interest for future research. Satisfaction question responses (Table 9) were collapsed into two categories: Satisfied and Not Satisfied in order to utilize categorical statistics (e.g., Chi-square). Very Satisfied and Satisfied responses were collapsed into the Satisfied category while Very Unsatisfied and Unsatisfied responses were collapsed into the Unsatisfied category.

Table 7 shows that male respondents were older ($p=0.012$), had more years in practice post residency ($p=0.006$), had more years of practice at their current sites ($p=0.002$) and saw more clinic patients per week ($p=0.006$). Marginally significant results indicated that men also seemed

to work more hours per week in providing direct patient care ($p=0.075$) and were on call for any service for more hours per week ($p=0.058$).

Table 8 indicates that female respondents were more likely to be employed ($p=0.027$), were more likely to use internet databases, journals, and e-publications ($p=0.034$) and were more likely to utilize electronic physician education materials ($p=0.008$). Male respondents were more likely to provide other operating room services ($p=0.012$) and were more likely to provide EGD or colonoscopy services ($p=0.005$). Marginally significant results indicated that females were more likely to be in the 30-48 year old age group used in later comparative analyses ($p=0.092$).

Table 9 shows two marginally significant results. First, males appeared to be more satisfied with compensation for patient care ($p=0.171$) while females were more likely to be satisfied with the ability of their hospital to recruit qualified Family Medicine physicians ($p=0.125$).

Comparative Results by Age Group

The responses from the Rural Family Medicine Physician Survey were analyzed for differences by age group and these results are portrayed in Tables 10, 11 and 12. Age groups were constructed using the median age for all Family Medicine physician respondents. The median age was 48.5 years. Two age groups were created: 30-48 years of age and 49-83 years of age. Statistically significant results ($p=0.05$) are highlighted in yellow. Results with marginally significant results (in this case p values from greater than 0.05 to less than 0.20) are highlighted in tan. These marginally significant results are useful given the lack of statistical power due to small sample sizes in some cells and given the fact that this study serves as a pilot project to identify areas of interest for future research. Satisfaction question responses (Table 12) were collapsed into two categories: Satisfied and Not Satisfied in order to utilize categorical statistics (e.g., Chi-square). Very Satisfied and Satisfied responses were collapsed into the Satisfied category while Very Unsatisfied and Unsatisfied responses were collapsed into the Unsatisfied category.

Table 10 shows that 49-83 years of age respondents had more years in practice post residency ($p=0.000$) and had more years of service at their current sites ($p=0.000$). Age group 30-48 years of age respondents anticipated more future years of service at their current sites ($p=0.000$) and anticipated to be practicing more years at any site ($p=0.000$). Marginally significant results indicated that age group 49-83 years of age respondents also seemed to be on call for any service for more hours per week ($p=0.139$) and saw more clinic patients per week ($p=0.052$).

Table 11 indicates that 30-48 years of age respondents were more likely to be employed ($p=0.002$), to have some medical school or residency training in Idaho ($p=0.000$), to have access to service obligation or loan repayment at their current sites ($p=0.000$), to provide prenatal care ($p=0.006$), vaginal delivery ($p=0.012$), and inpatient admissions ($p=0.044$), to utilize internet databases, journals and e-publications ($p=0.043$) and to plan to maintain board certification in Family Medicine ($p=0.011$). Marginally significant results indicated that age group 30-48 years of age respondents were more likely to provide EGD or colonoscopy services ($p=0.176$), to provide emergency room coverage ($p=0.144$) and to utilize electronic physician education materials ($p=0.078$).

Table 12 shows no statistically significant or marginally significant results across age groups for the collapsed satisfaction questions.

Comparative Results by Employment Group

The responses from the Rural Family Medicine Physician Survey were analyzed for differences by employment group and these results are portrayed in Tables 13, 14 and 15. Employment group classifications were constructed using qualitative responses from the survey. Two groups were constructed: Employed and Not Employed. Statistically significant results ($p=0.05$) are highlighted in yellow. Results with marginally significant results (in this case p values from greater than 0.05 to less than 0.20) are highlighted in tan. These marginally significant results are useful given the lack of statistical power due to small sample sizes in some cells and given the fact that this study serves as a pilot project to identify areas of interest for future research. Satisfaction question responses (Table 15) were collapsed into two categories: Satisfied and Not Satisfied in order to utilize categorical statistics (e.g., Chi-square). Very Satisfied and Satisfied responses were collapsed into the Satisfied category while Very Unsatisfied and Unsatisfied responses were collapsed into the Unsatisfied category.

Table 13 shows that Not Employed respondents were older ($p=0.000$), had more years in practice post residency ($p=0.000$), had more years of service at their current sites ($p=0.000$) and saw more clinic patients per week ($p=0.000$). Employed respondents anticipated to be practicing more years at any site ($p=0.001$). Marginally significant results indicated that Employed respondents provided more hours of direct patient care per week ($p=0.152$).

Table 14 indicates that Employed respondents were more likely to be in the age group 0-48 years of age ($p=0.002$), be female ($p=0.027$), to have access to service obligation or loan repayment at their current sites ($p=0.001$), to provide prenatal care ($p=0.049$) and emergency room coverage ($p=0.007$), to supervise midlevel care ($p=0.039$), to utilize teleconferencing or other interactive technology ($p=0.001$) and to plan to maintain board certification in Family Medicine ($p=0.047$). Not Employed respondents were more likely to provide mental health services ($p=0.016$) and to use electronic health records for patient care ($p=0.014$). Marginally significant results indicated that Employed respondents were more likely to provide vaginal delivery ($p=0.179$), while Not Employed respondents were more likely to provide nursing home services ($p=0.170$).

Table 15 shows that Employed respondents were more likely to be satisfied with their malpractice coverage ($p=0.003$). Marginally significant results suggest that Employed respondents were more likely to be satisfied with their compensation for patient care ($p=0.051$) and with their overall satisfaction with their current practice ($p=0.090$).

Comparisons Across Survey Respondent Groups

Seven questions from the Hospital Administrator Survey and the Rural Family Medicine Physician Survey were analyzed for differences between respondent groups. Tables 16 and 17 provide these results. Hospital Administrators thought Family Medicine physicians should provide less hours of direct patient care than actual work reported by Family Medicine physicians who responded to the survey ($p=0.012$). No other statistically significant or marginally statistically significant results were observed in Tables 16 and 17.

Discussion

The Discussion section is divided into five areas. First, the research limitations of this study are described. The second area discusses the results for the Hospital Administrator Survey. The third section reviews the Rural Family Medicine Physician Survey results overall and by comparative group. The fourth area comments on comparisons between the respondent groups across surveys. Lastly, the fifth section provides a brief summary of high-level observations for this research. Recommendations for further study are also provided within each of the areas.

Research Limitations

The primary limitation of this research is that the respondents for the surveys may not represent the entire eligible respondent classes. The overall response rates for the two surveys were relatively high given the survey methodology. These relatively high response rates can most likely be attributed to the partnerships with the Idaho Academy of Family Physicians, Inc. and the Idaho Hospital Association in securing participation of their respective memberships in the surveys. Although the response rate for the Hospital Administrator Survey was 67.9% (19/28), nine hospitals did not return the surveys. With a total response number of 19, nine additional surveys could materially alter the Hospital Administrator results. The Rural Family Medicine Physician Survey response rate was 37.1% (92/248). Again, the non-respondents could significantly impact the Family Medicine physician results.

A second limitation of the research is that small sample sizes in some analyses yielded limited statistical power to detect differences between groups. Increasing the sample sizes in these comparisons would enhance the probability of detecting statistically significant differences between groups, if such differences actually exist.

Hospital Administrator Survey

Hospital administrators reported that their facilities had an average of 4.8 full time equivalent (FTE) Family Medicine physicians on their medical staffs. The median number of such FTE's was 3.0. The median number of FTEs currently being recruited at these facilities was 0.8 and 10 of 18 facilities indicated that they were recruiting no FTEs. This suggests that recruitment challenges at rural facilities are not uniform and that future research may need to focus on a more select group of facilities. It appears that most of the hospitals responding to the survey are not experiencing a shortage of Family Medicine physicians for their medical staffs. This may be related to the fact that 61.1% of the facilities reported that they had an opportunity for loan repayment at their sites.

Hospital administrators reported that Family Medicine physicians at their facilities provided a wide range of obstetrics services ranging from prenatal care to vaginal delivery and C-sections. In over half the respondents, Family Medicine physicians were reported to provide other hospital operating room services and procedures such as EGD or colonoscopies. Over two thirds of these respondents indicated that Family Medicine physicians covered the emergency departments and almost all indicated that Family Medicine physicians provided inpatient admissions and nursing home services. Almost 80% of these Family Medicine physicians were reported to supervise midlevel care. On the other hand, less than half of the respondents indicated that Family Medicine physicians provided mental health services. These data support a picture of a Family

Medicine physician base actively involved in a wide variety of clinical services at the reporting hospitals. Future studies may wish to address the relatively lower rate of provision of mental health services by these facilities and physicians.

Hospital administrator respondents also indicated that the majority of their Family Medicine physicians used a number of electronic and internet-based tools to help support their practice and ongoing training and education. Two thirds of the facilities reported that maintaining board certification was a requirement and 100% supported participation in educational opportunities for students and residents at their facilities. It appears that most hospitals are providing advanced clinical and educational opportunities for their Family Medicine physician staff which may also augment recruitment and retention efforts at their sites. Additional research may be beneficial in ascertaining why some facilities are not requiring Family Medicine board certification for their staffs. In addition, more research related to the use of internet databases, teleconferencing and other electronic physician education materials and their impact on recruitment and retention merits consideration.

Finally, Hospital Administrator respondents indicated a high rate of satisfaction with their Family Medicine physician staff. In fact, only one of 18 respondents indicated dissatisfaction on this question. These respondents were also satisfied with other areas involved with recruitment and retention of Family Medicine physicians including malpractice insurance, vacation coverage, recruiting qualified Family Medicine physicians and turnover. They were somewhat less satisfied with compensation for direct patient care for Family Medicine physicians although over half of the respondents were satisfied with compensation. These results suggest that reporting Hospital Administrators were generally satisfied with the abovementioned areas and that the recruitment and retention policies and strategies currently employed by these facilities seem to be working. Future research may focus on these Idaho specific practices to determine how they may support recruitment and retention of Family Medicine physicians. It may be instructive to delineate the similarities and differences between Idaho practices and other state practices in how they support recruitment and retention of Family Medicine physicians to hospital-based practice in rural areas.

Rural Family Medicine Physician Survey

Respondents to the Rural Family Medicine Physician Survey were seasoned physicians with an average age of 47.2 years and an average of 16.0 years in practice post residency. These respondents also averaged 12.9 years of service at their current practice site and reported that they would serve an average of 13.1 additional years at this site. Based on these numbers, it does not appear that an exodus of rural Family Medicine physicians is imminent in Idaho rural communities. The respondents were 23.1% female and reported being employed in 33.3% of the responses. The responses from the survey also indicated that 33.7% of the Family Medicine physicians had some medical school or residency training in Idaho. This result suggests that the Family Medicine Residency of Idaho and the Idaho State University Family Practice Residency Program play an important role in the recruitment process of Family Practice physicians to rural areas of Idaho. Future research on the successful practices of these two residencies in the production of qualified Family Medicine physicians for rural Idaho might highlight successful innovations and policies for other interested parties. Furthermore, these two institutions appear to be important feeder tributaries for rural Idaho Family Medicine physicians and additional research could investigate how the productive capacity of these residencies could be increased.

Rural Family Medicine physicians who responded to this survey were involved in a variety of clinical activities. More than half of the respondents indicated that they provided prenatal care and vaginal delivery. Fewer than half of the respondents provided operative or procedure based care. About one half of the respondents reported emergency room coverage. Almost all of the respondents indicated that they provided inpatient admissions, mental health services and nursing home services. Respondents reported supervising midlevel providers 72.5% of the time. Once again, additional research could address the apparent discrepancy between Hospital Administrator and Family Medicine physician responses regarding the provision of mental health services in Idaho. Idaho rural Family Medicine physicians used internet databases, teleconferencing and other electronic education materials but in somewhat lower rates than those reported by Hospital Administrators. Fully 89.7% of respondents indicated that they were planning to maintain board certification in Family Medicine. This suggests that board certification is important for rural Family Medicine physicians and also highlights another area for further investigation of methods to increase recruitment and retention of these physicians by enhancing the capability to achieve such board certification via electronic means.

Rural Family Medicine physicians reported a high level of satisfaction with their current practice (92.4%). They were also quite satisfied with compensation for direct patient care, malpractice insurance and vacation coverage. Additional research would be useful to investigate the differences in satisfaction levels with compensation between Hospital Administrators and Family Medicine physicians noted in this study. Family Medicine physicians were not as satisfied with the ability of their hospital to recruit qualified Family Medicine physicians as they were with other satisfaction dimensions as only slightly more than 50% were satisfied with this issue.

Comparative Results by Gender

Female respondents were younger, less experienced and more likely to be employed. As such, these Family Medicine physicians are an important group for further research on retention issues. Females treated less clinic patients per week than males and were somewhat more likely to work fewer hours on direct patient care and take less calls. This productivity finding merits additional research as female respondents were also more likely to be younger and employed, additional factors associated with in the productivity metrics used in this study. Females were less likely to provide non-obstetrics related operating room services and EGD or colonoscopy procedures. Females were more likely to utilize internet databases, journals and e-publications as well as to utilize electronic education materials. Given the importance of maintaining board certification from a physician perspective, additional research on how to help in recruitment and retention efforts of female Family Medicine physicians may be productive. Lastly, females were somewhat less satisfied with compensation but more satisfied with the ability of their hospital to recruit qualified Family Medicine physicians.

Comparative Results by Age Group

Respondents in the 30-48 year age group were, as expected, less experienced. These physicians were also more likely to see fewer clinic patients per week and take less calls on a weekly basis. Further research should address the age/gender/employment connections to these productivity measures. Respondents in the 30-48 year age group were also more likely to be employed, more likely to have medical school or residency training in Idaho and more likely to have service

obligation or loan repayment at their current site. Once again, the issue of Idaho residencies and their impact on producing new Family Medicine physicians merits additional study. Respondents in the 30-48 year old group were more likely to provide prenatal care, vaginal deliveries and inpatient admissions. They were somewhat more likely to provide EGD or colonoscopy and emergency room coverage. These respondents, in a pattern similar to female respondents (who are somewhat more likely to be in the 30-48 year old age group), are more likely to use internet databases, journals and e-publications and somewhat more likely to utilize electronic physician education materials. These respondents are also more likely to plan to maintain board certification in Family Medicine. There were no differences in satisfaction measures between the two age groups. This group of physicians in the 30-48 age group merits serious investigation in order to learn more about both recruitment and retention issue in Idaho. These Family Medicine physicians are providing a critical service, prenatal care, in rural areas. They believe board certification is important. They use electronic educational materials. They have recently made the decision to practice Family Medicine in rural Idaho. As such, they will be the labor pool going forward. The researchers strongly suggest additional study focusing on issues important to this age group of practicing physicians.

Comparative Results by Employment Group

Employed respondents were younger and less experienced. On average, they worked somewhat more hours per week in direct patient care but saw less clinic patients per week. Employed physicians were more likely to have service obligation of loan repayment at their current site. Once again, the gender/age/employment matrix merits additional research. Employed respondents were more likely to provide prenatal care, emergency room coverage, and to supervise midlevel care. They were somewhat more likely to provide vaginal deliveries. These respondents were less likely to provide mental health care and somewhat less likely to provide nursing home care. The mental health service issue has been previously recommended as an additional line of research and these results support this suggestion. The nursing home finding also supports additional research, especially given the demographic changes anticipated over the next 25 years. Employed physicians are more likely to utilize teleconferencing or other interactive technology and to utilize electronic health records for patient care. This finding may be related to the technology being available in an employed situation. Lastly, employed physician respondents all (100%) planned to maintain board certification in Family Medicine. Employed respondents were more likely to be satisfied with malpractice insurance and somewhat more likely to be satisfied with compensation for direct patient care. They were also somewhat more satisfied with their current practice. The researchers suggest more research comparing the factors related to recruitment and retention by employment status. These groups, employed versus non-employed, appear to be somewhat different across a number of important dimensions. These differences may suggest alternate strategies to recruit and retain rural Family Medicine physician in different employment situations.

Comparative Results by Respondent Group

The comparative statistical tests across selected survey questions by respondent group found that Hospital Administrators thought that Family Medicine physicians should provide direct patient care fewer hours per week than actually reported by practicing physicians. This was an unexpected finding. Respondant group comparative results demonstrated no other statistically

significant or marginally significant findings. Across surveys, there was a consistency of findings that lent credibility to each of the individual survey results.

Summary

Rural hospitals and Family Medicine practices in rural areas across the country are experiencing recruitment and retention challenges. Idaho rural hospitals seem to be managing these issues and report a robust workforce providing a broad scope of patient services. These hospitals utilize a broadly trained Family Medicine physician work force, integrate electronic education and clinical capabilities and engender generally high levels of satisfaction with recruitment and retention issues important for Family Medicine physicians. Idaho practicing rural Family Medicine physicians also report high levels of satisfaction across critical areas related to recruitment and retention. They state that they provide clinical services across a wide variety of practice domains and are using technology to improve their performance and education. Younger respondents reported even greater participation in areas such as obstetrics and other procedures than their counterparts. This being said, recent research indicates that Idaho will need substantially more Family Medicine physicians in the coming years. Further research needs to be focused on how to meet these upcoming needs. This study suggests that such research focus on issues such as gender, age, employment status, compensation, provision of mental health services, prenatal care and delivery services, technology, hospital policies and the role of the Idaho residencies as they relate to the recruitment and retention of Family Medicine physicians in rural areas of Idaho. Study related to a historical perspective of the recruitment and retention of these physician groups may yield valuable information for future strategies. A consistent and adequate supply of Family Medicine physicians is critical to Idaho citizens in order to maximize their health outcomes. The key groups in the recruitment, training, and retention of these physicians have a duty to assist in making sure that all reasonable efforts are made to ensure that rural areas have the medical services they need. This pilot study suggests that rural Idaho may uniquely recruit and retain qualified and highly satisfied Family Medicine physicians providing an unusually broad set of medical services, including obstetrics and other procedures. Further investigating these factors may have significant implications when planning for the future health care needs of Idaho's rural citizens as well as their national counterparts.

References

1. The Massachusetts medical society 2006 physician workforce study. [www.massmed.org] (2006).
2. Bricker, K., Amitabh, C. (2005). The effect of malpractice liability on the delivery of health care. *Forum for Health Economics and Policy*, 8, 1-29.
3. Campbell, J., Harris, K., Hodge, R. (2001). Introducing telemedicine technology to rural physicians and settings. *Journal of Family Practice*, 50, 419-424.
4. Ellsbury, K., Baldwin, L., Johnson, K., Runyan, S., Hart, G. (2002). Gender related factors in the recruitment of physicians to the rural northwest. *JABFM*, 15, 391-400.
5. Glasser, M., Peters, K., MacDowell, M. (2006). Rural Illinois hospital chief executive officers' perceptions of provider shortages and issues in rural recruitment and retention. *National Rural Health Association*, 22, 59-62.
6. Mackay B. (2003). Are spouses the key to retention of rural MDs? *Canadian Medical Association Journal*, 168(4), 473.
7. Perch, A., Yallapragada, R.R., Birkenmeier, B., Authement, J.P., Roe, C.W. (1997). Recruitment of primary healthcare physicians in rural area. *Hospital Topics*, 29(5), 75.
8. Rabinowitz, H., Diamond, J., Markham, F., Paynter, N. (2001). Critical factors for designing programs to increase the supply and retention of rural primary care physicians. *Journal of the American Medical Association*, 286, 1041-1048.
9. Rabinowitz, H., Diamond, J., Markham, F., Rabinowitz, C. (2005). Long-term retention of graduates from a program to increase the supply of rural family physicians. *Academic Medicine*, 80, 728-732.
10. Rabinowitz, H. K., Paynter, N. P. (2002). The rural vs. urban practice decision. *Medical Student Journal of the American Medical Association*, 287(1), 113.
11. Rabinowitz, H., Diamond, J., Veloski, J., Gayle, J. (2000). The impact of multiple predictors on generalist physicians' care of underserved populations. *American Journal of Public Health*, 90, 1225-1228.
12. Rosenblatt, R., Andrilla, C. H. (2005). Medical student debt. *Association of American Medical Colleges*, 80, 815-819.
13. Rosenblatt, R., Andrilla, C. H., Curtin, T., Hart, L. G. (2006). Shortages of medical personnel at community health centers. *Journal of the American Medical Association*, 295, 1042-1049.
14. Rosenblatt, R. A., Schneeweiss, R., Hart, L. G., Casey, S., Andrilla, C., Holly, A. C., Fredrick, M. (2002). Family medicine training in rural areas. *Journal of the American Medical Association*, 288(9), 1063-1064.
15. Schleicher, S. (2006). Making the transition to rural practice: reasons why professionals choose rural practice. *Rural Roads*, Dec., 26-30.
16. Voelker, R. (1998). Going online in rural health, *Journal of the American Medical Association*, 279, 183.
17. Wainer, J. (2004). Work of female rural doctors. *Australia Journal of Rural Health*, 12, 49-53.

Appendix A provides a list of the 51 references used in the research summary.

Tables

Table 1:	Overall Results for the Hospital Administrator Survey: Survey Questions with Numerical Answers
Table 2:	Overall Results for the Hospital Administrator Survey: Survey Questions with Dichotomous Answers
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Table 15:	Comparative Results by Employment Group for the Rural Family Medicine Physician Survey: Survey Questions with Collapsed Satisfaction Answers

Tables (Continued)

Table 16: Comparative Results by Respondent Group for the Rural Family Medicine Physician Survey: Survey Questions with Numerical Answers

Table 17: Comparative Results by Respondent Group for the Rural Family Medicine Physician Survey: Survey Questions with Collapsed Satisfaction Answers

Table 1
Overall Results for the Hospital Administrator Survey
Survey Questions with Numerical Answers

Survey Question	N	Range	Standard Deviation	Median	Mean
Full-time equivalent Family Medicine physicians on staff?	18	0-14	4.1	3.0	4.8
Full-time equivalent Family Medicine physicians currently recruiting for?	18	0-3	1.0	0.0	0.8
Proximity of practice site to nearest hospital with higher scope of services in miles?	16	24-140	33.6	55.0	61.9
On average, how many hours per week should a Family Medicine physician provide direct patient care?	17	28-55	6.9	38.0	37.4
On average, how many hours per week should a Family Medicine physician be on call for any service?	16	8-96	21.7	24.0	32.6
On average, how many clinic patients should a Family Medicine physician see per week?	17	35-130	20.4	96.0	89.5

Table 2
Overall Results for the Hospital Administrator Survey
Survey Questions with Dichotomous Answers

Survey Question	N	Percent Yes (N)	Percent No (N)
Any current opportunity for loan repayment?	18	61.1 (11)	38.9 (7)
Do Family Medicine physicians provide prenatal care?	18	83.3 (15)	16.7 (3)
Do Family Medicine physicians provide vaginal delivery?	19	63.2 (12)	36.8 (7)
Do Family Medicine physicians provide C-section?	19	57.9 (11)	42.1 (8)
Do Family Medicine physicians provide other OR services?	19	52.6 (10)	47.4 (9)
Do Family Medicine physicians provide EGD or colonoscopy?	18	50.0 (9)	50.0 (9)
Do Family Medicine physicians provide ER coverage?	19	68.4 (13)	31.6 (6)
Do Family Medicine physicians provide inpatient admissions?	18	100.0 (18)	0.0 (0)
Do Family Medicine physicians provide mental health services?	19	42.1 (8)	57.9 (11)
Do Family Medicine physicians provide nursing home services?	19	94.7 (18)	5.3 (1)
Do Family Medicine physicians supervise midlevel care?	19	78.9 (15)	21.1 (4)
Do Family Medicine physicians utilize internet databases, journals, e-publications?	18	94.4 (17)	5.6 (1)
Do Family Medicine physicians utilize teleconferencing or other interactive technology?	18	66.7 (12)	33.3 (6)
Do Family Medicine physicians utilize electronic health records for patient care?	18	61.1 (11)	38.9 (7)
Do Family Medicine physicians utilize electronic physician education materials?	16	93.8 (15)	6.3 (1)
Do you require Family Medicine physicians to maintain board certification in Family Medicine?	18	61.1 (11)	38.9 (7)
Would you support educational opportunities for medical students and/or residents at your site?	18	100.0 (18)	0.0 (0)

Table 3
Overall Results for the Hospital Administrator Survey
Survey Questions with Satisfaction Answers

Survey Question	N	% (N) Very Satisfied	% (N) Satisfied	% (N) Unsatisfied	% (N) Very Unsatisfied
How satisfied is your hospital with Family Medicine physician compensation for patient care?	17	11.8 (2)	47.1 (8)	29.4 (5)	11.8 (2)
How satisfied are you with your malpractice coverage arrangement for Family Medicine physicians?	16	18.8 (3)	75.0 (12)	6.3 (1)	0.0 (0)
How satisfied are you with your ability to arrange coverage for vacation or leave for Family Medicine physicians?	16	12.5 (2)	62.5 (10)	25.0 (4)	0.0 (0)
How satisfied are you with your ability to recruit qualified Family Medicine physicians?	16	18.8 (3)	50.0 (8)	25.0 (4)	6.3 (1)
How satisfied are you with Family Medicine physician turnover at your site?	18	22.2 (4)	55.6 (10)	11.1 (2)	11.1 (2)
Overall, how satisfied are you with your current Family Medicine physician staff?	18	38.9 (7)	55.6 (10)	0.0 (0)	5.6 (1)

Table 4
Overall Results for the Rural Family Medicine Physician Survey
Survey Questions with Numerical Answers

Survey Question	N	Range	Standard Deviation	Median	Mean
Age in years?	92	30-83	10.9	48.5	47.2
Years in practice post residency?	92	1-55	11.2	13.5	16.0
Years at this practice site?	92	1-38	10.3	10.0	12.9
Future years anticipated to be at this practice site?	76	0-30	7.9	10.0	13.1
Future years anticipated to be in practice at any site?	83	0-40	8.4	17.0	16.7
Proximity of practice site to residency training site in miles?	88	15-3000	743.4	375.0	705.7
Proximity of practice site to hometown or extended family in miles?	88	0-3400	963.0	460.0	861.8
On average, how many hours per week to you provide direct patient care?	92	16-72	12.1	44.5	44.3
On average, how many hours per week are you on call for any service?	82	0-168	32.5	33.5	40.0
On average, how many clinic patients do you see per week?	88	0-210	36.3	85.0	88.5

Table 5
Overall Results for the Rural Family Medicine Physician Survey
Survey Questions with Dichotomous Answers

Survey Question	N	Percent Yes (N)	Percent No (N)
Gender? (Females coded as "Yes"; Males "No")	91	23.1 (21)	76.9 (70)
Any medical school/residency training in Idaho?	92	33.7 (31)	66.3 (61)
Any service obligation or loan repayment at current site?	92	21.7 (20)	78.3 (72)
Do you provide prenatal care?	92	57.6 (53)	42.4 (39)
Do you provide vaginal delivery?	92	52.2 (48)	47.8 (44)
Do you provide C-section?	92	37.0 (34)	63.0 (58)
Do you provide other OR services?	92	43.5 (40)	56.5 (52)
Do you provide EGD or colonoscopy?	89	22.5 (20)	77.5 (69)
Do you provide ER coverage?	92	48.9 (45)	51.1 (47)
Do you provide inpatient admissions?	90	88.9 (80)	11.1 (10)
Do you provide mental health services?	91	90.1 (82)	9.9 (9)
Do you provide nursing home services?	92	88.0 (81)	12.0 (11)
Do you supervise midlevel care?	91	72.5 (66)	27.5 (25)
Do you utilize internet databases, journals, e-publications?	91	83.5 (76)	16.5 (15)
Do you utilize teleconferencing or other interactive technology?	90	36.7 (33)	63.3 (57)
Do you utilize electronic health records for patient care?	91	47.3 (43)	52.7 (48)
Do you utilize electronic physician education materials?	90	64.4 (58)	35.6 (32)
Do you plan to maintain board certification in Family Medicine?	87	89.7 (78)	10.3 (9)
Would you encourage medical students/residents to enter rural Family Medicine?	86	88.4 (76)	11.6 (10)

Table 6
Overall Results for the Rural Family Medicine Physician Survey
Survey Questions with Satisfaction Answers

Survey Question	N	% (N) Very Satisfied	% (N) Satisfied	% (N) Unsatisfied	% (N) Very Unsatisfied
How satisfied are you with your compensation for patient care?	92	23.9 (22)	45.7 (42)	27.2 (25)	3.3 (3)
How satisfied are you with your malpractice coverage arrangement?	92	23.9 (22)	55.4 (51)	18.5 (17)	2.2 (2)
How satisfied are you with your ability to arrange coverage for vacation or leave?	92	35.9 (33)	50.0 (46)	12.0 (11)	2.2 (2)
How satisfied are you with the ability of your hospital to recruit qualified Family Medicine physicians?	86	14.0 (12)	39.5 (34)	41.9 (36)	4.7 (4)
Overall, how satisfied are you with your current practice?	92	28.3 (26)	64.1 (59)	6.5 (6)	1.1 (1)

Table 7
Comparative Results by Gender for the Rural Family Medicine Physician Survey
Survey Questions with Numerical Answers

Survey Question	Gender	N	Mean (1)	Mann-Whitney U (2)	p value
Age in years?	Female	21	42.0	467.5	0.012
	Male	70	48.7		
Years in practice post residency?	Female	21	10.8	441.0	0.006
	Male	70	17.4		
Years at this practice site?	Female	21	7.2	411.5	0.002
	Male	70	14.4		
Future years anticipated to be at this practice site?	Female	16	11.3	404.5	0.377
	Male	59	13.7		
Future years anticipated to be in practice at any site?	Female	19	17.6	554.0	0.621
	Male	63	16.5		
Proximity of practice site to residency training site in miles?	Female	19	894.0	579.0	0.491
	Male	68	631.1		
Proximity of practice site to hometown or extended family in miles	Female	18	1120.4	551.0	0.463
	Male	69	777.9		
On average, how many hours per week to you provide direct patient care?	Female	21	40.3	547.0	0.075
	Male	70	45.2		
On average, how many hours per week are you on call for any service?	Female	20	32.8	438.0	0.058
	Male	61	42.2		
On average, how many clinic patients do you see per week?	Female	20	69.8	400.0	0.006
	Male	67	93.9		

(1) Mean values are portrayed for ease of interpretation instead of Mean Rank values utilized in Mann-Whitney U tests.

(2) Mann-Whitney U statistic employed due to low sample size of administrator subgroup.

Table 8
Comparative Results by Gender for the Rural Family Medicine Physician Survey
Survey Questions with Dichotomous Answers

Survey Question	Gender	N	% Yes	Chi-Square Statistic	p value (1)
Employed Group (Employed coded as "Yes")	Female Male	21 68	52.4 26.5	4.90	0.027
Age Group (0-48 years old coded as "Yes")	Female Male	21 70	66.7 45.7	2.84	0.092
Any medical school/residency training in Idaho?	Female Male	21 70	28.6 35.7	0.37	0.545
Any service obligation or loan repayment at current site?	Female Male	21 70	28.6 20.0	(2)	0.548
Do you provide prenatal care?	Female Male	21 70	52.4 58.6	0.25	0.615
Do you provide vaginal delivery?	Female Male	21 70	42.9 54.3	0.85	0.358
Do you provide C-section?	Female Male	21 70	28.6 38.6	0.70	0.403
Do you provide other OR services?	Female Male	21 70	19.0 50.0	6.32	0.012
Do you provide EGD or colonoscopy?	Female Male	21 67	0.0 28.4	(2)	0.005
Do you provide ER coverage?	Female Male	21 70	38.1 51.4	1.15	0.284
Do you provide inpatient admissions?	Female Male	20 69	85.0 89.9	(2)	0.688
Do you provide mental health services?	Female Male	21 69	90.5 89.9	(2)	1.000
Do you provide nursing home services?	Female Male	21 70	81.0 90.0	(2)	0.270
Do you supervise midlevel care?	Female Male	21 69	76.2 71.0	0.22	0.643
Do you utilize internet databases, journals, e-publications?	Female Male	20 70	100.0 80.0	(2)	0.034
Do you utilize teleconferencing or other interactive technology?	Female Male	19 70	42.1 35.7	0.26	0.609
Do you utilize electronic health records for or patient care?	Female Male	20 70	45.0 48.6	0.08	0.778
Do you utilize electronic physician education materials?	Female Male	20 69	90.0 58.0	7.01	0.008
Do you plan to maintain board certification in Family Medicine?	Female Male	19 67	94.7 88.1	(2)	0.677
Would you encourage medical students/residents to enter rural family Medicine?	Female Male	20 65	95.0 87.7	(2)	0.679

(1) 2-sided test

(2) Fischer's Exact test (2-sided) utilized due to cell count minimums.

Table 9
Comparative Results by Gender for the Rural Family Medicine Physician Survey
Survey Questions with Collapsed Satisfaction Answers

Survey Question (1)	Gender	N	% Satisfied	Chi-Square Statistic	p value (2)
How satisfied are you with your compensation for patient care?	Female Male	21 70	57.1 72.9	1.87	0.171
How satisfied are you with your malpractice coverage arrangement?	Female Male	21 70	90.5 75.7	(3)	0.222
How satisfied are you with your ability to arrange coverage for vacation or leave?	Female Male	21 70	90.5 84.3	(3)	0.725
How satisfied are you with the ability of your hospital to recruit qualified Family Medicine physicians?	Female Male	19 66	68.4 48.5	2.35	0.125
Overall, how satisfied are you with your current practice?	Female Male	21 70	90.5 92.9	(3)	0.660

(1) Satisfaction answers were collapsed into two categories; "Satisfied" which includes the Very Satisfied and Satisfied responses, and "Unsatisfied" which includes the Very Unsatisfied and Unsatisfied responses.

(2) 2-sided test

(3) Fischer's Exact test (2-sided) utilized due to cell count minimums.

Table 10
Comparative Results by Age Group for the Rural Family Medicine Physician Survey
Survey Questions with Numerical Answers

Survey Question	Age Group	N	Mean	t (1)	p value (2)
Years in practice post residency?	30-48 years old	46	7.1	-12.61	0.000
	49-83 years old	46	24.8	(1)	
Years at this practice site?	30-48 years old	46	5.9	-8.74	0.000
	49-83 years old	46	19.8	(1)	
Future years anticipated to be at this practice site?	30-48 years old	35	17.1	4.46	0.000
	49-83 years old	41	9.8	(1)	
Future years anticipated to be in practice at any site?	30-48 years old	42	21.8	7.08	0.000
	49-83 years old	41	11.4		
Proximity of practice site to residency training site in miles?	30-48 years old	43	694.2	-0.14	0.888
	49-83 years old	45	716.7		
Proximity of practice site to hometown or extended family in miles (2)	30-48 years old	43	949.0	0.82	0.413
	49-83 years old	45	778.5	(1)	
On average, how many hours per week to you provide direct patient care?	30-48 years old	46	45.7	1.15	0.255
	49-83 years old	46	42.8		
On average, how many hours per week are you on call for any service?	30-48 years old	39	34.4	-1.49	0.139
	49-83 years old	43	45.1		
On average, how many clinic patients do you see per week?	30-48 years old	45	81.0	-1.98	0.052
	49-83 years old	43	96.3	(1)	

(1) Unequal variance model employed

(2) 2-sided test

Table 11
Comparative Results by Age Group for the Rural Family Medicine Physician Survey
Survey Questions with Dichotomous Answers

Survey Question	Age Group	N	% Yes	Chi-Square Statistic	p value (1)
Employed Group (Employed coded as "Yes")	30-48 years old 49-83 years old	45 45	48.9 17.8	9.80	0.002
Gender (Female coded as "Yes")	30-48 years old 49-83 years old	46 45	30.4 15.6	2.84	0.092
Any medical school/residency training in Idaho?	30-48 years old 49-83 years old	46 46	54.6 13.0	17.56	0.000
Any service obligation or loan repayment at current site?	30-48 years old 49-83 years old	46 46	43.5 0.0	25.56	0.000
Do you provide prenatal care?	30-48 years old 49-83 years old	46 46	71.7 43.5	7.52	0.006
Do you provide vaginal delivery?	30-48 years old 49-83 years old	46 46	65.2 39.1	6.27	0.012
Do you provide C-section?	30-48 years old 49-83 years old	46 46	41.3 32.6	0.75	0.388
Do you provide other OR services?	30-48 years old 49-83 years old	46 46	43.5 43.5	0.00	1.000
Do you provide EGD or colonoscopy?	30-48 years old 49-83 years old	46 43	28.3 16.3	1.83	0.176
Do you provide ER coverage?	30-48 years old 49-83 years old	46 46	56.5 41.3	2.13	0.144
Do you provide inpatient admissions?	30-48 years old 49-83 years old	45 45	95.6 82.2	4.05	0.044
Do you provide mental health services?	30-48 years old 49-83 years old	46 45	93.5 86.7	(2)	0.315
Do you provide nursing home services?	30-48 years old 49-83 years old	46 46	91.3 84.8	0.93	0.335
Do you supervise midlevel care?	30-48 years old 49-83 years old	46 45	78.3 66.7	1.54	0.215
Do you utilize internet databases, journals, e-publications?	30-48 years old 49-83 years old	46 45	91.3 75.6	4.10	0.043
Do you utilize teleconferencing or other interactive technology?	30-48 years old 49-83 years old	46 45	39.1 34.1	0.25	0.620
Do you utilize electronic health records for or patient care?	30-48 years old 49-83 years old	46 45	50.0 44.4	0.28	0.596
Do you utilize electronic physician education materials?	30-48 years old 49-83 years old	45 45	73.3 55.6	3.10	0.078
Do you plan to maintain board certification in Family Medicine?	30-48 years old 49-83 years old	46 41	97.8 80.5	(2)	0.011
Would you encourage medical students/residents to enter rural family Medicine?	30-48 years old 49-83 years old	45 41	88.9 87.8	(2)	1.000

(1) 2-sided test

(2) Fischer's Exact test (2-sided) utilized due to cell count minimums.

Table 12
Comparative Results by Age Group for the Rural Family Medicine Physician Survey
Survey Questions with Collapsed Satisfaction Answers

Survey Question (1)	Age Group	N	% Satisfied	Chi-Square Statistic	p value (2)
How satisfied are you with your compensation for patient care?	30-48 years old	46	69.6	0.00	1.000
	49-83 years old	46	69.6		
How satisfied are you with your malpractice coverage arrangement?	30-48 years old	46	82.6	.597	0.440
	49-83 years old	46	76.1		
How satisfied are you with your ability to arrange coverage for vacation or leave?	30-48 years old	46	89.1	.806	0.369
	49-83 years old	46	82.6		
How satisfied are you with the ability of your hospital to recruit qualified Family Medicine physicians?	30-48 years old	44	59.1	1.14	0.286
	49-83 years old	42	47.6		
Overall, how satisfied are you with your current practice?	30-48 years old	46	95.7	(3)	0.434
	49-83 years old	46	89.1		

(1) Satisfaction answers were collapsed into two categories; "Satisfied" which includes the Very Satisfied and Satisfied responses, and "Unsatisfied" which includes the Very Unsatisfied and Unsatisfied responses.

(2) 2-sided test

(3) Fischer's Exact test (2-sided) utilized due to cell count minimums.

Table 13
Comparative Results by Employment Group for the Rural Family Medicine Physician Survey
Survey Questions with Numerical Answers

Survey Question	Employment Group	N	Mean	t (1) (2)	p value (3)
Age in years?	Employed Not Employed	30 60	40.67 50.27	-4.375	0.000
Years in practice post residency?	Employed Not Employed	30 60	9.1 19.4	-5.17 (2)	0.000
Years at this practice site?	Employed Not Employed	30 60	6.7 16.2	-5.45 (2)	0.000
Future years anticipated to be at this practice site?	Employed Not Employed	25 50	14.3 12.7	0.83	0.409
Future years anticipated to be in practice at any site?	Employed Not Employed	28 54	21.1 14.6	3.55	0.001
Proximity of practice site to residency training site in miles?	Employed Not Employed	28 58	792.1 627.9	0.98	0.328
Proximity of practice site to hometown or extended family in miles (2)	Employed Not Employed	27 59	1017.7 802.8	0.95	0.343
On average, how many hours per week to you provide direct patient care?	Employed Not Employed	30 60	47.2 43.4	1.44	0.152
On average, how many hours per week are you on call for any service?	Employed Not Employed	27 53	45.9 37.6	1.07	0.290
On average, how many clinic patients do you see per week?	Employed Not Employed	28 58	69.5 98.7	-3.76	0.000

- (1) t-test test statistic employed,
sample size approaches or equals N=30
(2) unequal variance model employed
(3) 2-sided test

Table 14
Comparative Results by Employment Group for the Rural Family Medicine Physician Survey
Survey Questions with Dichotomous Answers

Survey Question	Employment Group	N	% Yes	Chi-Square Statistic	p value (1)
Age Group (0-48 years old coded as "Yes")	Employed Not Employed	30 60	73.3 38.3	9.80	0.002
Gender (Female coded as "Yes")	Employed Not Employed	29 60	37.9 16.7	4.90	0.027
Any medical school/residency training in Idaho?	Employed Not Employed	30 60	43.3 30.0	1.58	0.210
Any service obligation or loan repayment at current site?	Employed Not Employed	30 60	43.3 11.7	11.60	0.001
Do you provide prenatal care?	Employed Not Employed	30 60	73.3 51.7	3.88	0.049
Do you provide vaginal delivery?	Employed Not Employed	30 60	63.3 48.3	1.81	0.179
Do you provide C-section?	Employed Not Employed	30 60	43.3 35.0	0.59	0.442
Do you provide other OR services?	Employed Not Employed	30 60	36.7 48.3	1.10	0.294
Do you provide EGD or colonoscopy?	Employed Not Employed	30 57	26.7 21.1	0.35	0.554
Do you provide ER coverage?	Employed Not Employed	30 60	70.0 40.0	7.20	0.007
Do you provide inpatient admissions?	Employed Not Employed	29 59	93.1 89.8	(2)	1.000
Do you provide mental health services?	Employed Not Employed	30 59	80.0 96.6	(2)	0.016
Do you provide nursing home services?	Employed Not Employed	30 60	80.0 91.7	(2)	0.170
Do you supervise midlevel care?	Employed Not Employed	30 59	86.7 66.1	4.27	0.039
Do you utilize internet databases, journals, e-publications?	Employed Not Employed	30 59	90.0 79.7	1.52	0.218
Do you utilize teleconferencing or other interactive technology?	Employed Not Employed	30 58	60.0 24.1	10.99	0.001
Do you utilize electronic health records for or patient care?	Employed Not Employed	30 59	30.0 57.6	6.08	0.014
Do you utilize electronic physician education materials?	Employed Not Employed	30 59	63.3 64.4	0.01	0.921
Do you plan to maintain board certification in Family Medicine?	Employed Not Employed	29 56	100.0 85.7	(2)	0.047
Would you encourage medical students/residents to enter rural family Medicine?	Employed Not Employed	30 54	93.3 87.0	(2)	0.480

(1) 2-sided test

(2) Fischer's Exact test (2-sided) utilized due to cell count minimums.

Table 15
Comparative Results by Employment Group for the Rural Family Medicine Physician Survey
Survey Questions with Collapsed Satisfaction Answers

Survey Question (1)	Employment Group	N	% Satisfied	Chi-Square Statistic	p value (2)
How satisfied are you with your compensation for patient care?	Employed Not Employed	30 60	83.3 63.3	3.81	0.051
How satisfied are you with your malpractice coverage arrangement?	Employed Not Employed	30 60	96.7 70.0	8.54	0.003
How satisfied are you with your ability to arrange coverage for vacation or leave?	Employed Not Employed	30 60	93.3 83.3	(3)	0.324
How satisfied are you with the ability of your hospital to recruit qualified Family Medicine physicians?	Employed Not Employed	30 55	53.3 52.7	0.00	0.957
Overall, how satisfied are you with your current practice?	Employed Not Employed	30 60	100.0 88.3	(3)	0.090

(1) Satisfaction answers were collapsed into two categories; "Satisfied" which includes the Very Satisfied and Satisfied responses, and "Unsatisfied" which includes the Very Unsatisfied and Unsatisfied responses.

(2) 2-sided test

(3) Fischer's Exact test (2-sided) utilized due to cell count minimums.

Table 16
Comparative Results by Respondent Group for the Rural Family Medicine Physician Survey
Survey Questions with Numerical Answers

Survey Question (1)	Respondent Group	N	Mean (2)	Mann-Whitney U (3)	p value
On average, how many hours per week should a Family Medicine physician provide direct patient care?	Administrator Physician	17 92	37.4 44.3	481.5	0.012
On average, how many hours per week should a Family Medicine physician be on call for any service?	Administrator Physician	16 82	32.6 40.0	557.5	0.341
On average, how many clinic patients should a Family Medicine physician see per week?	Administrator Physician	17 88	89.5 88.5	663.0	0.457

- (1) Administrator survey question listed; physician survey question requested actual weekly work load.
(2) Mean values are portrayed for ease of interpretation instead of Mean Rank values utilized in Mann-Whitney U tests.
(3) Mann-Whitney U statistic employed due to low sample size of administrator subgroup.

Table 17
Comparative Results by Respondent Group for the Rural Family Medicine Physician Survey
Survey Questions with Collapsed Satisfaction Answers

Survey Question (1)	Respondent Group	N	% Satisfied	Chi-Square Statistic	p value (2)
How satisfied are you with compensation for patient care?	Administrator Physician	17 92	58.8 69.6	0.76	0.383
How satisfied are you with malpractice coverage arrangements?	Administrator Physician	16 92	93.8 79.3	(3)	0.296
How satisfied are you with your ability to arrange coverage for vacation or leave?	Administrator Physician	16 92	75.0 85.9	(3)	0.275
How satisfied are you with the ability of your hospital to recruit qualified Family Medicine physicians?	Administrator Physician	16 86	68.8 53.5	1.27	0.259

(1) Satisfaction answers were collapsed into two categories; "Satisfied" which includes the Very Satisfied and Satisfied responses, and "Unsatisfied" which includes the Very Unsatisfied and Unsatisfied responses.

(2) 2-sided test

(3) Fischer's Exact test (2-sided) utilized due to cell count minimums.

Appendices

Appendix A: Literature Review Summary Grid

Appendix B: Hospital Administrator Survey

Appendix C: Hospital Administrator Cover Letter and Survey E-mail Notification Documents

Appendix D: Rural Family Medicine Physician Survey

Appendix E: Rural Family Medicine Physician Cover Letter and Survey E-mail Notification Documents

Appendix A

Literature Review Summary Grid

Appendix A has been provided as a separate Excel document due to formatting limitations.

Appendix B

Hospital Administrator Survey

Hospital Administrator Survey

1. Full-time equivalent Family Medicine physicians on staff: _____
2. Full-time equivalent Family Medicine physicians currently recruiting for: _____
3. Any current opportunity for loan repayment? **Yes** **No** (circle one)
4. Proximity of practice site to nearest hospital with higher scope of services in miles:

5. Do Family Medicine physicians provide the following services? (circle Yes or No for each question)

Prenatal care	Yes	No
Vaginal delivery	Yes	No
C-section	Yes	No
Other OR services	Yes	No
EGD or colonoscopy	Yes	No
ER coverage	Yes	No
Inpatient admissions	Yes	No
Mental health	Yes	No
Nursing home	Yes	No
6. Do Family Medicine physicians supervise midlevel care? **Yes** **No** (circle one)
7. Do Family Medicine physicians utilize: (circle Yes or No for each question)

Internet databases, journals, e-publications	Yes	No
Teleconferencing or other interactive technology.....	Yes	No
Electronic health records for patient care.....	Yes	No
Electronic physician education materials	Yes	No
8. On average, how many hours per week should a Family Medicine physician provide direct patient care? _____
9. On average, how many hours per week should a Family Medicine physicians be on call for any service? _____
10. On average, how many clinic patients should a Family Medicine physician see per week?

11. What is your employment/business relationship model for Family Medicine physicians?

12. How satisfied is your hospital with Family Medicine physician compensation for patient care? (check one)

Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____

13. How satisfied are you with your malpractice coverage arrangement for Family Medicine physicians? (check one)

Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____

14. How satisfied are you with your ability to arrange coverage for vacation or leave for Family Medicine physicians? (check one)

Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____

15. How satisfied are you with the ability of your hospital to recruit qualified Family Medicine physicians? (check one)

Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____

16. How satisfied are you with Family Medicine physician turnover at your site? (check one)

Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____

17. What is the single most significant barrier for full recruitment of qualified Family Medicine physicians?

18. Do you require Family Medicine physicians to maintain board certification in Family Medicine? **Yes** **No** (circle one)

19. Overall, how satisfied are you with your current Family Medicine physician staff? (check one)

Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____

20. Would you support educational opportunities for medical students and or residents at your site? **Yes** **No** (circle one)

Thank you for taking the time to fill out this survey. The Idaho Hospital Association will share the results with you after these data are analyzed and a report is completed. Please use the postage paid envelope to return this survey to Boise State University. The researchers thank the Family Medicine Residency of Idaho and the Idaho Hospital Association for their assistance in this project and the Idaho Department of Health and Welfare, Office of Rural Health and Primary Care for funding this research.

Appendix C

Hospital Administrator Survey Cover Letter and E-mail Notification Documents

(Cover letter for Hospital Administrator Survey)

IHA Letterhead

Date

Name of Administrator

Title

Name of Hospital

Hospital Address

Dear Name:

Your association has agreed to assist in the facilitation of a research study of factors associated with recruitment and retention of Family Medicine physicians in Idaho. Information from this study will be used to develop strategies to increase the number of Family Medicine physicians serving in Idaho. Funding for this study is provided by the Idaho Department of Health and Welfare – Office of Rural Health and Primary Care, through a federal grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration. The Center for Health Policy of the College of Health Sciences at Boise State University holds the prime contract for this study. The Family Medicine Residency of Idaho, the Idaho Academy of Family Physicians, Inc. and the Idaho Hospital Association are participants in this research.

Please take a few minutes to answer the questions on the survey that accompanies this letter and then return it to Boise State University in the postage-paid envelope by April 30, 2007 in order to be included in the summary results. Be advised that your answers will be anonymous and the data from the surveys will only be released in aggregate form. In addition, limited information on demographic factors which could specifically identify an institution will be obtained and every effort will be made to protect participants' confidentiality. If you are uncomfortable answering any of these questions, you may leave them blank.

If you have any questions about these confidentiality issues, or any other research question, please contact the Principal Investigator for the study, Ed Baker, Ph.D., Director, Center for Health Policy at Boise State University, at 208-426-3118. In addition, David Schmitz, M.D., Rural Director at the Family Medicine Residency of Idaho serves as the Medical Director for the study and is available to discuss any issues with you. He can be reached at 208-367-6824.

Thank you in advance for helping us learn more about recruitment and retention issues for Family Medicine physicians impacting hospitals in Idaho. This research is important in maintaining access to quality health care and is directly related to the health status of communities in Idaho. The results of this study will be available through the Idaho Hospital Association in late July, 2007.

Sincerely,

Steven A. Millard
President

(Hospital Administrator Survey initial e-mail notification)

Hospital Address

Dear Colleague (or individual name):

Your association has agreed to assist in the facilitation of a research study of factors associated with recruitment and retention of Family Medicine physicians in Idaho. Information from this study will be used to develop strategies to increase the number of Family Medicine physicians serving in Idaho. Funding for this study is provided by the Idaho Department of Health and Welfare – Office of Rural Health and Primary Care, through a federal grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration. The Center for Health Policy of the College of Health Sciences at Boise State University holds the prime contract for this study. The Family Medicine Residency of Idaho, the Idaho Academy of Family Physicians, Inc. and the Idaho Hospital Association are participants in this research.

We are mailing a survey to you today. Please take a few minutes to answer the questions on the survey and then return it to Boise State University in the postage-paid envelope. We are requesting all surveys be returned by April 30, 2007 in order to be included in the summary results. Be advised that your answers will be anonymous and the data from the surveys will only be released in aggregate form. In addition, limited information on demographic factors which could specifically identify an institution will be obtained and every effort will be made to protect participants' confidentiality. If you are uncomfortable answering any of these questions, you may leave them blank.

If you have any questions about these confidentiality issues, or any other research question, please contact the Principal Investigator for the study, Ed Baker, Ph.D., Director, Center for Health Policy at Boise State University, at 208-426-3118. In addition, David Schmitz, M.D., Rural Director at the Family Medicine Residency of Idaho serves as the Medical Director for the study and is available to discuss any issues with you. He can be reached at 208-367-6824.

Thank you in advance for helping us learn more about recruitment and retention issues for Family Medicine physicians impacting hospitals in Idaho. This research is important in maintaining access to quality health care and is directly related to the health status of communities in Idaho. The results of this study will be available through the Idaho Hospital Association in late July, 2007.

Sincerely,

Steven A. Millard
President

(Hospital Administrator Survey second e-mail notification)

Hospital Address

Dear Colleague (or individual name):

This is a friendly nudge to remind you to please complete the survey we recently mailed to regarding a research study of factors associated with recruitment and retention of Family Medicine physicians in Idaho. If you will recall, information from this study will be used to develop strategies to increase the number of Family Medicine physicians serving in Idaho.

Please take a few minutes to answer the questions on the survey and then return it to Boise State University in the postage-paid envelope by April 30, 2007 in order to be included in the summary results. Please remember that your answers will be anonymous and the data from the surveys will only be released in aggregate form.

If you have any questions about these confidentiality issues, or any other research question, please contact the Principal Investigator for the study, Ed Baker, Ph.D., Director, Center for Health Policy at Boise State University, at 208-426-3118. In addition, David Schmitz, M.D., Rural Director at the Family Medicine Residency of Idaho serves as the Medical Director for the study and is available to discuss any issues with you. He can be reached at 208-367-6824.

Thank you in advance for helping us learn more about recruitment and retention issues for Family Medicine physicians impacting hospitals in Idaho. This research is important in maintaining access to quality health care and is directly related to the health status of communities in Idaho. The results of this study will be available through the Idaho Hospital Association in late July, 2007.

Sincerely,

Steven A. Millard
President

Appendix D

Rural Family Medicine Physician Survey

Rural Family Medicine Physician Survey

21. Age: _____
22. Gender: **Male** **Female** (circle one)
3. Years in practice post residency: _____
4. Years at this practice site: _____
5. Future years anticipated to be at this practice site: _____
6. Future years anticipated to be in practice at any site: _____
7. Proximity of practice site to residency training site in miles: _____
8. Any medical school/residency training in Idaho? **Yes** **No** (circle one)
9. Any service obligation or loan repayment at current site? **Yes** **No** (circle one)
10. Proximity of practice site to hometown or extended family in miles: _____
11. Do you provide the following services? (circle Yes or No for each question)
- | | | |
|----------------------------|------------|-----------|
| Prenatal care | Yes | No |
| Vaginal delivery | Yes | No |
| C-section | Yes | No |
| Other OR services | Yes | No |
| EGD or colonoscopy | Yes | No |
| ER coverage | Yes | No |
| Inpatient admissions | Yes | No |
| Mental health | Yes | No |
| Nursing home | Yes | No |
12. Do you supervise midlevel care? **Yes** **No** (circle one)
13. Do you utilize: (circle Yes or No for each question)
- | | | |
|--|------------|-----------|
| Internet databases, journals, e-publications..... | Yes | No |
| Teleconferencing or other interactive technology.... | Yes | No |
| Electronic health records for patient care..... | Yes | No |
| Electronic physician education materials | Yes | No |

14. On average, how many hours per week do you provide direct patient care? _____
15. On average, how many hours per week are you on call for any service? _____
16. On average, how many clinic patients do you see per week? _____
17. What is your employment/business relationship?

18. How satisfied are you with your compensation for patient care? (check one)
Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____
19. How satisfied are you with your malpractice coverage arrangement? (check one)
Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____
20. How satisfied are you with your ability to arrange coverage for vacation or leave? (check one)
Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____
21. How satisfied are you with the ability of your hospital to recruit qualified Family Medicine physicians? (check one)
Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____
22. What is your primary source of continuing medical education?

23. Do you plan to maintain board certification in Family Medicine? **Yes** **No** (circle one)
24. Overall, how satisfied are you with your current practice? (check one)
Very satisfied _____ **Satisfied** _____ **Unsatisfied** _____ **Very Unsatisfied** _____
25. Would you encourage medical students/residents to enter rural Family Medicine? **Yes** **No** (circle one)

Thank you for taking the time to fill out this survey. The Idaho Academy of Family Physicians, Inc. will share the results with you after these data are analyzed and a report is completed. Please use the postage paid envelope to return this survey to Boise State University. The researchers thank the Family Medicine Residency of Idaho and the Idaho Hospital Association for their assistance in this project and the Idaho Department of Health and Welfare, Office of Rural Health and Primary Care for funding this research.

Appendix E

Rural Family Medicine Physician Survey Cover Letter and E-Mail Notification Documents

(Cover letter for Rural Family Medicine Physician Survey)

IAFP Letterhead

Date

Physician Address

Dear Colleague (or individual name):

The Idaho Academy of Family Physicians (IAFP), along with several partners, is conducting a research survey around recruitment and retention issues in rural Family Medicine. The study will be used to develop strategies to illustrate the difficulties rural family physicians face. With your help, we can develop an Idaho-focused study with data specific to our state. Law makers and community leaders respond best to information collected from their constituents. The data will help educate community and government decision makers concerning the lack of resources and the need to assist family physicians in their efforts to care for citizens in rural Idaho. It will enable IAFP to better support family physicians. The survey results will also enable one of our partners, the Family Medicine Residency of Idaho, to better prepare family physicians to take on the challenges of rural medicine.

Please take a few minutes to answer the questions on the survey and return it to Boise State University in the postage-paid envelope. We are requesting all surveys be returned by April 30, 2007. For this research project, we are requesting demographic information. Due to the make-up of Idaho's population, the combined answers to these questions may make an individual person identifiable. We will make every effort to protect participants' confidentiality. However, if you are uncomfortable answering any of these questions, you may leave them blank.

If you have any questions about the survey, please contact the Principal Investigator for the study, Ed Baker, Ph.D., Director, Center for Health Policy at Boise State University, at 208-426-3118. In addition, David Schmitz, M.D., Rural Director at the Family Medicine Residency of Idaho serves as the Medical Director for the study and is available to discuss any issues with you. He can be reached at 208-367-6824.

Thank you for helping us learn more about recruitment and retention issues impacting Family Medicine physicians in the rural areas of Idaho. This research is important in expanding access to quality health care and improving the health outcomes for people in rural communities. The results will be available through the Idaho Academy of Family Physicians, Inc. office in late July, 2007.

Sincerely,

Michelle Gardner, M.D.

President, Idaho Academy of Family Physicians, Inc.

Funding for this study is provided by the Idaho Department of Health and Welfare – Office of Rural Health and Primary Care, through a federal grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration. The Center for Health Policy of the College of Health Sciences at Boise State University is the prime contractor for this study. The Family Medicine Residency of Idaho, the Idaho Academy of Family Physicians, Inc., and the Idaho Hospital Association are participants in this research.

(Rural Family Medicine Physician Survey initial e-mail notification)

Dear Colleague (or individual name):

The Idaho Academy of Family Physicians (IAFP), along with several partners, is conducting a research survey around recruitment and retention issues in rural Family Medicine. The study will be used to develop strategies to illustrate the difficulties rural family physicians face. With your help, we can develop an Idaho-focused study with data specific to our state. Law makers and community leaders respond best to information collected from their constituents. The data will help educate community and government decision makers concerning the lack of resources and the need to assist family physicians in their efforts to care for citizens in rural Idaho. It will enable IAFP to better support family physicians. The survey results will also enable one of our partners, the Family Medicine Residency of Idaho, to better prepare family physicians to take on the challenges of rural medicine.

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Michelle Gardner, M.D.
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(Rural Family Medicine Physician Survey second e-mail notification)

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This is a friendly nudge to remind you to please complete the survey we recently mailed to you regarding a research study of factors associated with recruitment and retention of Family Medicine physicians in Idaho. If you will recall, information from this study will be used to develop strategies to increase the number of Family Medicine physicians serving in Idaho.

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Appendix A
Factors Influencing Recruitment and Retention of Rural Family Medicine Physicians

				Demographics Core Area					Scope of Practice Core Area							Economic Core Area						Lifestyle Core Area				
Article	Research or General	Date	Source	Age	Gender	Med Ed/Training	Family Background	Other	Operative Obstetrics	EMR	Medical Technology	Mental Health	Hospital Availability	Continuing Education	Other	Salary	Malpractice	Solo Practice	Cost of Living	Spouse Employment	Other	Recreation	Time Off Duty	Cultural Proximity	Other	
2005 review of physician recruiting incentives.	Research	2005	Merritt, Hawkins & Assoc.													X										
2005 survey of hospital physician recruitment trends.	Research	2005	Merritt, Hawkins & Associates			X							X			X										
2006 review of physician recruitment incentives.	Research	2006	Merritt, Hawkins & Associates											X		X		X								
2006 survey of primary care physicians.	Research	2006	Merritt, Hawkins & Associates			X										X							X		X	
A delicate balance: The economics of rural health care delivery.	Research	2-Jan-07	Medical Student Journal of the American Medical Association													X					X					
A program to increase the number of family physicians in rural and underserved areas.	Research	20-Jan-99	Journal of the American Medical Association		X	X	X	X																		
Are spouses the key to retention of rural MDs?	Research	Feb-03	Canadian Medical Associates Journal								X		X			X		X		X						
Area health education center and community health center collaboration.	Research	2006	National Rural Health Association											X							X					
Critical factors for designing programs to increase the supply and retention of rural primary care physicians.	Research	5-Sep-01	Journal of the American Medical Association	X	X	X	X	X								X					X		X			
Doctors rarely attracted to rural clinics.	General	Jul-05	Vail Daily News													X					X					
Does a rural education experience influence students' likelihood of rural practice?	Research	2002	Medical Education		X	X	X																		X	
Encouraging news about physician family recruitment: Three developments predict a positive trend in job opportunities.	General	Apr-05	Family Practice Management	X				X																		
Entry of medical school graduates into family medicine residences: 2005-2006 and 3-year summary.	Research	Oct-06	Family Medicine			X		X																		
Exploring the effects of telehealth on medical human resources supply : A qualitative case study in remote regions.	Research	Jun-05	BMC Health Services Research		X	X	X							X	X	X				X	X			X	X	
Factors associated with choosing a primary care career.	Research	Jun-96	The Western Journal of Medicine			X	X																		X	
Family medicine training in rural areas.	Research	4-Sep-02	Journal of the American Medical Association			X		X																		
Family practice in the US.	Research	4-Sep-02	Journal of the American Medical Association		x	x								x												
Financially distressed rural hospitals in 4 states.	Research	Jan-04	Walsh Center for Rural Health Analysis																		X					

Appendix A
Factors Influencing Recruitment and Retention of Rural Family Medicine Physicians

				Demographics Core Area					Scope of Practice Core Area							Economic Core Area						Lifestyle Core Area				
Article	Research or General	Date	Source	Age	Gender	Med Ed/Training	Family Background	Other	Operative Obstetrics	EMR	Medical Technology	Mental Health	Hospital Availability	Continuing Education	Other	Salary	Malpractice	Solo Practice	Cost of Living	Spouse Employment	Other	Recreation	Time Off Duty	Cultural Proximity	Other	
Gender related factors in the recruitment of physicians to the rural northwest.	Research	Sep-Oct 2002	The Journal of the American Board of Family Practice		X	X									X	X				X			X		X	
Going online in rural health.	General	21-Jan-98	Journal of the American Medical Association								X															
and the primary care workforce for rural underserved areas.	Research	Jun-05	Health Affairs			X								X	X											
technology to rural physicians and settings.	Research	May-01	Journal of Family Practice								X														X	
graduates from a program to increase the supply of rural	Research	Aug-05	Academic Medicine			X	X														X					
Medical student debt.	Research	Sep-05	Association of American Medical Colleges	X	X						X										X				X	
rural communities in WWAMI land.	General	23/30- Jul-03	Journal of the American Medical Association			X														X					X	
in family practice: Are they getting the job done?	Research	Feb-98	Family Medicine		X	X	X																			
retention in a large IDS: Economic implications.	Research	Nov-01	Healthcare Financial Management	X		X										X		X								
Physicians helping the underserved.	Research	5-Jan-00	Journal of the American Medical Association												X						X					
Primary care physicians in underserved areas: Family physicians dominate.	Research	Dec-95	The Western Journal of Medicine			X		X						X	X											
Quality through collaboration: The future of rural health care.	Research	2005	National Academy of Sciences			X	X	X			X			X							X					
Reasons why professionals choose rural practice.	General	Dec-06	Rural Roads													X		X	X		X	X			X	
Recruiting physicians and long-term viability: Perspectives of physicians and practice managers.	Research	Jun-05	Journal of Health Care Finance										X		X	X				X		X	X		X	
Recruiting physicians to rural practice: Suggestions for success.	Research	Nov-91	The Western Journal of Medicine	X	X		X									X	X		X							
Recruitment and retention of physicians for primary care research.	Research	Apr-02	Journal of Community Health			X					X			X												
Recruitment of primary healthcare physicians in rural areas.	General	Fall 1997	Hospital Topics v75.n4			X	X		X		X		X							X		X		X		
Reproductive health care in the rural united states.	Research	2-Jan-07	Medical Student Journal of the American Medical Association						X		X				X	X										
Rural background and clinical rural rotations during medical training: Effect on practice location.	Research	Sep-99	Journal of the American Medical Association	X	X	X	X								X											
Rural doctors and rural backgrounds: How strong is the evidence?	Research	Jun-03	Australia Journal of Rural Health			X	X																			

Appendix A
Factors Influencing Recruitment and Retention of Rural Family Medicine Physicians

				Demographics Core Area					Scope of Practice Core Area							Economic Core Area						Lifestyle Core Area				
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Rural Illinois hospital chief executive officers' perceptions of provider shortages and issues in rural recruitment and retention.	Research	Winter 2006	National Rural Health Association			X	X								X			X							X	
Shortages of medical personnel at community health centers.	Research	1-Mar-06	Journal of the American Medical Association				X		X			X			X	X				X	X			X	X	
Suggestions for success.	Research	Nov-91	The Western Journal of Medicine	X	X								X													
Taking surgical services to rural Ecuador	General	4-Nov-06	The Lancet							X	X															
The challenge of providing doctors for rural America.	General	Aug-05	Academic Medicine	X		X	X							X						X					X	
The effect of accredited rural training tracks on physician placement.	General	1-Jul-00	American Family Physician			x																				
The effects of socioeconomic status on health in rural & urban America.	Research	2-Jan-02	Medical Student Journal of the American Medical Association										X		X											
The impact of multiple predictors on generalist physicians' care of underserved populations.	Research	Aug-00	American Journal of Public Health		X		X	X																		
The role of medical education in the recruitment and retention of rural physicians.	Research	2004	Medical Teacher			X	X																			
The rural vs. urban practice decision.	Research	2-Jan-07	Medical Student Journal of the American Medical Association	X	X	X	X											X		X		X			X	
Two decades of experience in the University of Washington Family Medicine Residency Network: Practice differences between graduates in rural and urban locations.	Research	Jun-05	Journal of Rural Health	X	X	X	X						X	X		X							X			
What lures women physicians to practice medicine in rural areas.	Research	27-Jun-01	Journal of the American Medical Association		X	X	X													X	X				X	
Will rural family medicine residency training survive?	Research	Jun-05	Family Medicine			X								X												
GRAND TOTAL				10	15	30	20	8	3	1	9	1	7	11	11	17	1	6	2	10	13	4	5	3	15	202
Core Area Total Classifications						83					43							49						27		
Core Area % of Total Classifications						41.1					21.3							24.3						13.4		
Sub-Category % of Core Area Classifications				12.0	18.1	36.1	24.1	9.6	7.0	2.3	20.9	2.3	16.3	25.6	25.6	34.7	2.0	12.2	4.1	20.4	26.5	14.8	18.5	11.1	55.6	